April 1988 A.E. Res. 88-6

FIELD CROP
ENTERPRISE BUDGET UPDATE

1988 COST AND RETURN PROJECTIONS
AND GROWER WORKSHEETS

NEW YORK STATE

Darwin P. Snyder

Department of Agricultural Economics
Cornell University Agricultural Experiment Station
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York 14853

It is the policy of Cornell University actively to support equality of educational and employment opportunity. No person shall be denied admission to any educational program or activity or be denied employment on the basis of any legally prohibited discrimination involving, but not limited to, such factors as race, color, creed, religion, national or ethnic origin, sex, age or handicap. The University is committed to the maintenance of affirmative action programs which will assure the continuation of such equality of opportunity.

ABSTRACT

Field crop enterprise budgets emphasizing cash variable costs are constructed in the context of two whole farm businesses. The farms consist of a 200 cow dairy farm with 500 acres of field crops and a 1,200 acre crop farm with field crops only. Machinery complement and land resource assumptions are made for each farm to determine fixed costs as well as cash variable costs for machinery use on the field crops. Machinery and other costs related to livestock enterprises have not been considered. The budgets permit the comparison of net returns per acre over cash variable costs for each field crop enterprise using 1988 price data for operating and capital costs. Enterprise comparisons are also made for the crop farm with or without government program participation and using corn marketing and field crop alternatives.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

The author wishes to recognize the assistance of members of the Departments of Agronomy and Agricultural Engineering at Cornell University and various industry sources in gathering data on which this study is based. In particular, the work of Dr. William F. Lazarus is recognized and appreciated in the development of the computer program used in generating these budgets. Support staff help is also appreciated.

LIST OF TABLES

FIELD CROP ENTERPRISE BUDGET UPDATE
1988 Cost and Return Projections and Grower Worksheets

Darwin P. Snyder*

Introduction

The profitability of a farm business is determined by many production and management factors. Perhaps the most elusive of these factors is business management. In order to better manage and improve the profitability of a business, a manager must use many tools to assist in planning, organizing, and controlling its operations. One tool that can assist in determining business strengths and weaknesses and in planning the organization and operation of the business is enterprise analysis.

Enterprise analysis involves examining the parts which comprise the business and the interactions between them. With a farm, the parts of the business are the various crop and livestock enterprises. Enterprise analysis involves viewing each crop and livestock activity as a separate unit with their respective receipts and expenses including labor requirements and fixed costs. Thus, rather than scrutinizing only the total farm business, the emphasis is placed on examining forage, grain, livestock, and cash crop enterprises and the interactions between them. By examining receipts and all expenses for each enterprise, the strengths and weaknesses of the business can be brought into sharper focus.

Because no two farms have identical resources available, the most profitable combination of enterprises will be unique to each farm. The impact on the business of changes such as adding or deleting an enterprise is determined specifically for that farm through enterprise analysis.

The objective of this publication is to provide a data base to assist New York farmers in analyzing field crop enterprises. Enterprise budgets for selected New York field crops are presented and discussed. These budgets are useful for cash crop and livestock farms in New York as well as other states, particularly in the Northeast. Because resources and cost structures in many areas of the Northeast are similar to New York, a budget constructed for other areas of the Northeast would be very similar to the budgets in this publication.

Purpose

The purpose of this publication is to construct 1988 budgets for field crop enterprises typically found on dairy and cash crop farms in New York State. These are partial budgets which include only the operating costs for each crop and the returns that might be expected from current prices for somewhat better than average yields.

The results of these budgets will help the user to assess current relative economic advantages of the crops considered. With this information, researchers and farm managers will have a base of information that will help them to advise and make better informed decisions about profitable combinations of crop enterprises. The results can be used as presented or as adapted to meet the conditions of a specific farm business in the budgeting process.

---

*Research Associate at Cornell University.

The Budget Procedure

The crop enterprise budgets in this publication are constructed using the economic-engineering approach. This procedure uses current prices for operating costs such as seed, fertilizer, chemicals, and supplies. Other variable costs such as machinery repairs and fuel are calculated using engineering data for the operation of the machinery complements assumed for the farm operation.

Although all costs of production need to be considered to determine enterprise profits, these budgets are designed to aid in making short-run, annual decisions about enterprise size and mix. With relatively stable fixed costs to spread over the crop acreage, the variable costs, considered here, will provide an estimate of the annual operating costs for each crop. These costs and assumed crop values are used to estimate the net contribution each crop will make toward meeting the fixed costs and other obligations of the farm operator.

The budgets are developed within the context of either a dairy farm or a crop farm. Dairy farms of various sizes are common throughout New York State. The central and western New York counties are the most likely locations for crop farms and the larger dairy farms. Budget results should be interpreted and applied in the light of the assumptions made. They can be used for specific farm situations if differences related to enterprise size and yield, and machinery complements are recognized.

Crops common to a dairy farm are budgeted for a 500 acre, 200 cow dairy farm. The crop mix includes 250 acres of hay crops harvested as 100 acres of dry hay and 150 acres of hay crop silage. Two hundred fifty acres of corn are harvested as 150 acres of corn silage and 100 acres of high moisture ear corn. Horizontal silos are used to store silage and a tower silo is used for the high moisture corn.

A 1,200 acre cash crop farm is used as the framework to develop budgets for various field crops common to New York State. Two approaches are budgeted - without and with participation in the 1988 ASCS feed grain program. The basic crop mix for this farm includes 100 acres of dry hay, 750 acres of corn grain, 200 acres of a row crop, and 150 acres of a small grain crop.

Each of these two types of farms has a field machinery complement typical of what might be expected to grow and harvest the crops grown on that farm. Tractors and equipment used directly for livestock care are not included in the machinery complement. Engineering data for each piece of machinery are used to calculate operating and ownership costs for use in the budgets.

The budgets are developed for a given yield level and enterprise size for each crop enterprise. Annual operating costs are included to grow and harvest the crop. Harvest costs for the feed crops on the dairy farm include costs associated with placing the crop in farm storage. Harvest costs for the cash crop enterprises include costs necessary to prepare the crop for sale at the farm gate at harvest time. Costs to store the crops are not included for either farm.

Returns for each crop are based on estimates of values at harvest time and somewhat better than average yields. Cultural practices and input costs are reflective of good yield expectations. Hay crop yields on the dairy farm

were assumed to average three tons of dry hay whether harvested dry or as silage. Yield for the acre equivalents of hay crop silage was expressed in terms of hay equivalent to relate production to the value of more readily marketable hay. High moisture corn yields are consistent with the nitrogen input level for corn grain and the tendency for dairy farmers to harvest the more mature corn as grain rather than silage. Yields for the crop farms are also reflective of the input levels used and good cultural practices.

The budgeting procedure has involved the use of a computer spreadsheet program in the form of templates developed primarily to calculate operating costs for tractors and equipment used to produce the crops. Machinery related assumptions such as price, life, amount of annual use, and other factors will have an effect on operating costs charged to the crops. The assumptions used in the templates are believed to be reasonably indicative of the experience of New York crop producers and are presented in the Appendix of this publication.

Sources of Data

Many sources of data have been used in the construction of the budgets. Cultural practices and input levels were assumed with reference to Cornell Recommends for Field Crops. These practices were adapted to the budgets with the help of members of the Department of Agronomy at Cornell. Several commercial sources provided current prices on crop inputs and farm machinery. Engineering formulas and data used to calculate machinery costs were obtained from agricultural engineering sources. Contact with farm operators enhanced the judgment of the author in compiling reasonable machinery complements and enterprise combinations.

Suggestions for Use

The field crop budgets presented in this publication have several applications. One obvious use is to provide an estimate of current operating costs for a variety of field crops commonly grown in the State. The results can be used to determine relative direct costs to grow and harvest the budgeted crops. For the crop farm, results of not participating in the 1988 feed grain program can be compared with participation on the same farm.

The budgets can also be used to plan annual crop acreage combinations. As a starting point, they can be adapted to an individual set of practices and prices to provide estimates of cash flow needs and potential profits for a new year.

Finally, the budgeting process can help explore implications for major changes in enterprise size. Most variable costs included in the budgets will not change significantly with changes in enterprise size. However, as changes in enterprise size or practices dictate changes in equipment size and mix, operating costs per acre for repairs and fuel are likely to change to some degree.

Care must be exercised in using the enterprise budgets for they are only one estimate of costs and returns. They are not designed to represent average New York State conditions; instead they represent a specific set of conditions specified in the footnotes and accompanying tables. It is difficult for a user to compare his or her situation with an "average" so that necessary adjustments can be made. With a specified set of conditions, the user has a basis for comparison. The user should compare his or her conditions with those assumed in the budgets. Whenever the farm situation

differs significantly from the assumed conditions, the budgeted values must be critically analyzed and often changed. A budget worksheet is provided later in this publication for application of these procedures to a specific farm situation.

Product Prices and Input Costs

The prices and costs used in the budgets are shown in Table 1. The product prices are believed to be reasonable expectations for the 1988 crop year in New York State. Feed grain prices are estimated local support prices. Deficiency payments for corn and wheat are shown since one budget estimates the effect of program participation for these crops. The user should include the effects of participation on enterprise costs and returns and on the whole farm business as he or she makes decisions about a cropping program.

Input costs are representative of what producers can expect to pay for seed, fertilizer, chemicals, supplies, and other costs in 1988.

Budget Format

Because these budgets are intended to aid in making short-run management decisions, the format includes provision for only variable costs for each crop. Budgets are presented for the dairy farm and several situations on the crop farm.

The dairy farm (Tables 2 and 3) and cash crop farm include the crop enterprise mixes described earlier. Two crop farm situations are budgeted for different corn planting methods. Crop Farm #1 (the base farm) is budgeted for corn grain grown using conventional tillage practices (Tables 4 and 5). Crop Farm #2 has the same crop mix and acreages but the budgets are adapted for corn grain grown using no-till related practices, machinery, and inputs (Tables 8 and 9). Other management practices are assumed to be the same for both crop farms.

Budgets for other situations are presented for Crop Farm #1. Budgets are presented for red kidney beans and oats substituted for soybeans with no equipment or acreage changes (Tables 4 and 5). Also, enterprise budgets are presented for the base crops on Crop Farm #1 assuming participation in the corn and wheat feed grain programs with acreages at or slightly less than the maximum permitted acreages for each crop (Tables 6 and 7).

Variable costs are divided into four categories: cash costs for growing and harvesting the crop, interest on these operating costs, and labor costs. Labor is included as a variable cost because of the varying requirements for the different crops.

The first table for each farm situation (Tables 2, 4, 6, 8, and 10) provide some detail for the various categories as well as the total of these variable costs. Numbers in parentheses indicate physical quantities of those inputs.

The second table for each situation (Tables 3, 5, 7, 9, and 11) compares the variable costs and returns for each crop. The tables also illustrate the effects of crop price or yield changes on returns per unit for each enterprise.

Table 1. Product Prices and Input Costs

PRICES

Product	Unit	Price
Hay-alfalfa & grass	ton	$70.00
Corn silage	ton	22.00
Corn grain	bushel	2.10
Corn diversion payment	bushel	1.75
Corn deficiency payment	bushel	1.10
HM ear corn (33% mc)	ton	50.00
Wheat	bushel	2.70
Wheat deficiency payment	bushel	1.53
Oats	bushel	1.75
Straw, wheat	ton	70.00
Straw, oat	ton	60.00
Soybeans	bushel	5.75
Red kidney beans	pound	0.22

COSTS

Item	Unit	Cost	Item	Unit	Cost
Seed			Chemicals[a]		
Alfalfa	pound	$ 2.93	2, 4-D	gallon	$11.53
Timothy	pound	1.49	2, 4-DB	gallon	20.18
Corn	unit	64.79	Amiben	gallon	18.33
Oats	bushel	5.86	Atrazine 4L	gallon	8.48
Wheat, winter	bushel	6.75	Benlate 50WP	pound	14.36
Soybeans	bushel	13.85	Dual 8E	gallon	49.83
Red kidney beans	pound	0.55	Eptam 7E	gallon	22.53
			Furadan 15G	pound	1.45
Fertilizer			Lasso	gallon	20.54
N	pound	0.20	Lorox L	gallon	66.57
P	pound	0.22	Gramoxone Super	gallon	34.49
K	pound	0.14	Thimet 20G	pound	1.32
			Treflan	gallon	27.16
Lime,			Malathion 5E	gallon	19.68
spread (85% ENV)	ton	25.50	Methoxychlor 2E	gallon	13.51
			Seed treatment	acre	0.37
Labor Cost					
Regular	hour	7.44	Other		
Hourly, seasonal	hour	5.31	Twine (9,000 feet)	bale	18.23
			Diesel-field	gallon	0.79
Capital	percent	10.4	Diesel-road	gallon	1.03
			Gasoline-field, R	gallon	0.84
			Gasoline-road, UL	gallon	1.00
			LP gas-propane	gallon	0.79

[a]Trade names are used as examples and do not imply endorsement.

In analyzing the short-run income and profitability of each crop, the net returns per acre or unit over variable costs provides a basis for comparison. This factor shows how much each crop acre or unit contributes to fixed or overhead costs for each enterprise. Fixed costs include the ownership costs (depreciation, interest, taxes, insurance, and housing) for the machinery complement and land resource. The factor does not include a contribution toward the costs of marketing the crop since the assumption has been made that the crop is priced at harvest.

An analysis that included the marketing activity would involve assumptions related to the average crop price received during the marketing period and the costs associated with the marketing effort. These costs would include storage, interest on the stored crop, processing, packaging, transportation, and any other items that had an effect on the price received for the crop. Marketing practices vary widely between farms and are best analyzed apart from production practices and on a farm specific basis.

Tables 2 through 11 show budgeted variable costs for typical crops in the various farm situations. The next three tables (Tables 12, 13, and 14) provide comparisons of total costs and returns for the farms in each situation. These tables include the fixed costs for machine ownership and a charge for the use of the land. Land is charged at the current average rental rate paid for cropland by New York farmers.[1] At $30 per acre, actual costs of ownership are understated. However, a common rental rate applied consistently to each enterprise and farm situation prevents differences in taxes and land values from affecting enterprise result comparisons.

Tables 12, 13, and 14 show the total value of all crops grown in each combination of field crop enterprises. The reader is reminded that these values represent harvest time values and the budget costs do not include storing or marketing costs. To be successful, marketing efforts should result in crop prices enough higher than harvest time values to more than offset storing and marketing costs.

Total variable costs for the farm situations shown in the tables will provide some indication of the cash flow needs to grow and harvest the crops. These needs can be compared for the various crop enterprise combinations shown.

Budget Results

The purpose of the following tables is to provide data to enable the reader to examine the relative costs and returns from the crop mix situations presented. These crop mix decisions are shown in the context of two farm units considered reasonable in size for central and western New York State. These units are a 200 cow dairy farm with 500 acres of field crops and a crop farm with 1,200 acres of field crops. The budgets assume a continuing business with the same land base and field equipment resource except for equipment adjustments made to grow alternative crops including red kidney beans and no-till corn. Because labor requirements vary by crop, labor has been included as a variable cost.

The data for each crop mix are presented in pairs of tables. The first table details the variable costs for each crop and provides a projected total

[1] D.P. Snyder, Real Estate Rental Rates, New York State, 1984, A.E. Ext. 85-21, Department of Agricultural Economics, Cornell University, Ithaca, New York, 14853-7801.

variable cost per acre. The second table presents projected returns per acre and shows the net returns over variable costs per acre.

Since the acre is the unit of production common to each crop, net returns per acre over variable costs is a good factor to use in comparing one crop with another. This factor indicates how much each crop contributes toward meeting the fixed costs of the business such as land and equipment ownership costs. A comparison of this factor for each crop should influence which crops and how many acres of each should be grown based on the assumptions used in the budgets.

Also, shown in the second table is the break-even price per unit of primary crop necessary to cover the variable costs for the yield assumed. Finally, results are shown for situations where crop prices or yields are 20 percent lower and higher than those assumed.

Enterprise Results

Dairy Farm - Table 2 shows that the total variable costs per acre for hay and hay crop silage were quite similar. Variable costs for the corn crops were also very similar in spite of some input differences. Less nitrogen was used on corn silage than on high moisture corn because of manure application. This lower cost for corn silage was somewhat offset by higher labor and harvesting equipment costs. Overall, total variable costs per acre for the corn crops were higher than for the hay crops. In Table 3, with the yields and crop values assumed for these budgets, net returns per acre over variable costs, except for corn silage, were quite similar. Corn silage, valued at about 30 percent of the price of hay as harvested, had a considerably higher net return per acre than the hay crops or high moisture corn.

Crop Farm #1 - Variable costs per acre for the field crops grown on the crop farm, along with two substitute crops, are shown in Table 4. In the case of Crop Farm #1, the corn grain was grown using conventional tillage practices. Total variable costs per acre for corn were highest at $186 with red kidney beans next at $155 per acre. Variable costs for the other crops ranged from $107 to $125 per acre. Table 5 illustrates the slight advantage, in 1988, of both red kidney beans and oats over soybeans under the assumptions used. Red kidney beans and oats are projected to contribute about $7 and $23 per acre respectively more than soybeans toward the fixed costs and other financial needs of the business.

In Tables 6 and 7, the effects of participation in the corn and wheat feed grain programs are compared with the effects of nonparticipation. Enterprise size for both situations is held constant; that is, set-aside acres are included with producing acres. By including set-aside acres, costs and returns per acre for the participating enterprise were proportionately less than for the nonparticipating enterprise. The combination of lower costs and government payments for participating in the feed grain programs resulted in higher net returns and illustrate the advantage participating growers have over nonparticipating growers for each enterprise.

Table 7 shows that net returns per acre over variable costs were $63 higher for the 750 acre corn enterprise and $13 higher for the 150 acre wheat enterprise due to participation in the feed grain program. Since fixed costs would change very little, as indicated in the Table 12 comparison, participation would add about $41 per acre or nearly $49,000 to the return to management and profit for the year. As always, these results are based on

the assumptions used but do illustrate the importance of time and effort used to develop good data on which to base management decisions.

Crop Farm #2 - The results of conventional tillage and no-till practices for corn can be compared from Table 4 and 5, and Tables 8 and 9. Tables 8 and 9 show results for Crop Farm #2 which has essentially the same resources and crop mix as the basic Crop Farm #1. However, the corn crop on Crop Farm #2 is grown using no-till practices. Also, appropriate adjustments have been made in equipment needed for the change in tillage method.

According to these budgets, no-till corn production practices involve higher total variable costs and lower average yields than conventional practices. Lower growing costs for labor and machinery fuel and repair costs are more than offset by higher nitrogen, lime, and chemical costs per acre. Net returns over variable costs were about $30 per acre higher for conventionally tilled corn.

From a comparison of enterprise results presented in Tables 2 through 11, one can see the differences in variable costs and returns for the various crops as projected for the 1988 season. From this comparison, management decisions can be made to determine the most profitable combination of crop enterprises as well as marketing alternatives particularly for the crop farm.

The dairy farm enterprises (Tables 2 and 3) provide data for high moisture corn which can be a marketing alternative for corn grown on the crop farm. At similar dry shell equivalent yields, high moisture ear corn would result in somewhat higher returns per acre and, eliminating drying costs, would reduce production costs. Thus, with extra marketing efforts to develop high moisture corn markets, a substantial increase in net returns could be realized for corn harvested as high moisture corn instead of dry shelled corn. A comparison of net returns per acre over variable costs in Tables 3 and 5 shows an advantage of over $44 per acre for high moisture corn over dry shelled corn.

As indicated earlier, participation in the government farm programs boosts corn and wheat net returns per acre over variable costs. Likewise, red kidney beans resulted in higher net returns per acre than either soybeans or oats. In Tables 10 and 11, costs and returns are listed for the four basic crops for Crop Farm #1 assuming government program participation. Also, data are listed for the corn enterprise assuming half the crop is harvested and sold as high moisture ear corn. Data for red kidney beans are listed as an alternative crop to soybeans. From these data, one can compare the net returns per acre over variable costs in making the decision about choosing the optimum combination of enterprises.

Whole Farm Results

Differences in net returns per acre for individual enterprises are reflected in the results for the overall farm businesses of which the enterprises are a part. Tables 12 to 14 indicate levels of net returns over variable costs for each farm situation for the crop costs detailed in previous tables. This factor provides an indication of the amount available from the current year's crop proceeds to meet fixed costs, debt service, capital purchases, and management expectations of the farm operator. The farm operator's labor cost is included with other labor.

Net returns over total costs for each farm situation in the tables provides a comparison of returns to management and profit for the operator of

the farm business. The dairy farm has income from livestock, not shown in the tables, in addition to the value of crops fed on the farm. Therefore, it is not easily compared with the cash crop farm situations. Table 12 indicates a positive contribution to farm profit from the crop enterprises on the dairy farm using the assumed crop values, yields, and costs. Results of the dairy enterprise would affect the net returns for the dairy farm as a whole.

Overall farm results for the crop farm vary widely for the various situations budgeted. The advantage of conventional tillage for corn shown in the enterprise data is reflected in Table 12 as whole farm results are compared. Net returns over total costs increase from a loss of $12,109 with no-till corn to a profit of $3,905 with conventional tillage. Conventionally tilled corn with participation in the government farm programs adds nearly $49,000 more to the projected net returns for Crop Farm #1.

In Table 13, whole farm results are shown for the crop farm when either soybeans, red kidney beans or oats are grown. Again, red kidney beans show a slight advantage over oats and even more of an advantage over soybeans.

Combinations of marketing practices and crop mixes showing the greatest profit potential are compared in Table 14. By comparing alternative practices and crops with a base situation in a whole farm context, management decisions can be made to determine combinations most likely to enhance net returns. With the assumptions used in these budgets, government program participation for corn and wheat, conventional tillage for corn, marketing high moisture corn and substituting red kidney beans for soybeans result in the highest net return for the crop farm.

Reference is made to Appendix Tables 1 through 4 which show data for the crop machinery complements used for the dairy farm and each of the two crop farm budgets.

Notes to the Following Tables 2, 4, 6, 8, and 10:

a. Seed - Hay crops: Cost represents the annual cost for 12 pounds of alfalfa and five pounds of timothy allocated over a four year life of the stand.

Corn: 24-26 thousand kernels per acre.

b. Fertilizer - Hay crops - Includes 25 percent of fertilizer required for seeding.

Corn silage - Nitrogen reduced because of manure application.

c. Lime - Application should be based on soil test results. One-half ton of lime per acre is assumed for annual pH maintenance except for a somewhat higher requirement for no-till corn to maintain pH in the seed zone.

d. Chemicals - materials and rates per acre.

Hay crops - Methoxychlor 2E (0.75 gallons) Malathion 5E (0.3 gallons) applied annually to 15 percent of the acreage. (New seeding is mowed once for weed control.)

Corn - Conventional tillage - Dual 8E (2 pints), and Atrazine 4L (1 quart) per acre; seed treatment; Furadan 15G (6.7 pounds per acre on 1/2 acreage).

Corn - No till - Gramoxone Super (2.5 pints), Lasso (2.5 quarts), Atrazine 4L (1.5 quarts); seed treatment; Furadan 15G (6.7 pounds per acre on 1/2 acreage).

Soybeans - Dual 8E (2 pints), Lorox L (1 quart); seed treatment.

Red Kidney Beans - Eptam 7EC (2 quarts), Treflan 4E (1 pint); seed treatment, Sevin 80S (1.25 pounds).

Winter Wheat and Oats - 2,4-D (0.75 pints).

e. Interest - Calculated on growing and harvesting expenses at 10.4 percent for the crop production period.

f. Labor - Hours based on 1.3 times machinery hours. Additional hours added for handling hay and straw.

g. Drying Corn - Assume removal of 10 percentage points of moisture at 3.15 cents per point per bushel or 31.5 cents per bushel for all drying related costs.

h. Red Kidney Beans - Assume removal of 3 percentage points of moisture from 15 percent of the crop at 6.3 cents per point per bushel (twice the cost of drying corn due to longer time at lower temperatures to maintain quality).

Notes to Tables 6 and 7, and 10 and 11:

a. Costs and returns for participating corn and wheat enterprises are averaged over the total enterprise acreage including set-aside acreage.

b. Other returns per acre:

Corn (agricultural program receipts)

750 acre base - 150 acres (20 percent unpaid diversion) - 75 acres (10 percent paid diversion) = 525 acres permitted to plant.

Diversion payments

75 acres diverted x 90 bushels per acre ASCS yield x $1.75 per bushel diversion payment =	$11,812

Deficiency payments

525 acres permitted x 90 bushels per acre ASCS yield x $1.10 per bushel deficiency payment =	51,975
Total Other Returns for Corn =	$63,787*
Total Other Returns per Base Acre =	$85.05 per acre

Wheat

150 acre base - 42 acres (27.5 percent unpaid diversion) = 108 acres permitted to plant.

Deficiency payments

108 acres permitted x 45 bushels per acre ASCS yield x $1.53 per bushel deficiency payment =	$ 7,436*

Straw

108 acres planted x 1 ton per acre x $70 per ton =	7,560
Total Other Returns for Wheat =	$14,996
Total Other Returns per Base Acre =	$99.97 per acre

*Assumes two partners; agricultural program receipts may not exceed $50,000 per person.

Table 2. Field Crop Enterprise Budgets
Variable Costs per Acre
500 acre, 200 Cow Dairy Farm - 1988 Projected

Crop	Hay		Hay Crop Silage- HE		Corn Silage		High Moisture Ear Corn	
Acres	100		150		150		100	
Yield/ac, tn	3.0		3.0		17.0		5.3	
	qty	$	qty	$	qty	$	qty	$
Variable Growing Costs -								
Seed		10.65		10.65	26M	21.38	24M	19.44
Fert-N (lb)	0	0.00	0	0.00	40	8.00	125	25.00
P (lb)	35	7.70	35	7.70	40	8.80	40	8.80
K (lb)	57	7.98	57	7.98	40	5.60	40	5.60
Lime	0.5	12.75	0.5	12.75	0.5	12.75	0.5	12.75
Chemicals		2.47		2.47		19.81		19.81
Power/Eqpt-								
Fuel, oil		1.86		1.86		5.40		5.40
Repair		2.13		2.13		6.03		6.03
Other		2.00		2.00		2.00		2.00
Tot Grow		47.54		47.54		89.77		104.83
Variable Harvesting Costs -								
Power/Eqpt-								
Fuel, oil		7.95		11.29		7.35		6.33
Repair		12.00		19.36		12.05		10.55
Twine		6.08		0.00		0.00		0.00
Other		3.00		3.00		5.00		5.00
Tot Harv		29.03		33.65		24.40		21.88
Int - operating		3.98		4.22		3.96		4.39
Tot Selected Var. Costs		80.55		85.41		118.13		131.10
Labor (hr)	5.7	39.47	4.4	32.71	4.1	30.23	3.2	23.44
Tot Var Costs		120.02		118.12		148.36		154.54

See notes on page 10.

Table 3. Field Crop Enterprise Budgets
Comparison of Returns Over Variable Costs
500 acre, 200 cow Dairy Farm - 1988 Projected

Crop	Hay	Hay Crop Silage- HE	Corn Silage	High Moist Ear Corn
Acres	100	150	150	100
Yield / ac, tn	3.0	3.0	17.0	5.3
Price / Unit, $	70.00	70.00	22.00	50.00
	$	$	$	$
Returns per Acre -				
Crop	210.00	210.00	374.00	265.00
Other	0.00	0.00	0.00	0.00
Tot returns	210.00	210.00	374.00	265.00
Tot Var Costs - per acre	120.02	118.12	148.36	154.54
Net Returns over Var Costs -				
- per acre	89.98	91.88	225.64	110.46
- per unit	29.99	30.63	13.27	20.84
Break-even price per unit of primary crop to cover var cost	40.01	39.37	8.73	29.16
SENSITIVITY TO CROP PRICE OR YIELD CHANGES:				
20% Lower Crop Price or Yield				
Tot return/ ac	168.00	168.00	299.20	212.00
Net returns over var costs:				
- per acre	47.98	49.88	150.84	57.46
- per unit	15.99	16.63	8.87	10.84
20% Higher Crop Price or Yield				
Tot return/ ac	252.00	252.00	448.80	318.00
Net returns over var costs:				
- per acre	131.98	133.88	300.44	163.46
- per unit	43.99	44.63	17.67	30.84

Table 4. Field Crop Enterprise Budgets
Variable Costs per Acre
1,200 acre, Crop Farm #1 - 1988 Projected
(No participation in government programs)

Crop	Hay		Corn Grain (conv-till)		Soybeans (drilled)		Winter Wheat		Substituted for Soybeans RK Beans		Substituted for Soybeans Oats	
Acres	100		750		200		150		200		200	
Yield / ac	3 tn		120 bu		35 bu		60 bu		1200 lb		80 bu	
	Qty	$	Qty	$	Qty	$	Qty	$	Qty	$	Qty	$
Variable Growing Costs -												
Seed		10.65	24M	19.44	60	13.85	120	13.50	84	46.20	80	14.65
Fert-N (lb)	0	0.00	125	25.00	10	2.00	50	10.00	25	5.00	50	10.00
P (lb)	35	7.70	40	8.80	20	4.40	40	8.80	62	13.64	30	6.60
K (lb)	57	7.98	40	5.60	20	2.80	20	2.80	43	6.02	20	2.80
Lime (tn)	0.5	12.75	0.5	12.75	0.5	12.75	0.5	12.75	0.5	12.75	0.5	12.75
Chemicals		2.47		19.81		29.47		1.08		18.13		1.08
Power/Eqpt-												
Fuel, oil		1.65		4.32		4.57		4.57		4.59		4.57
Repair		1.99		6.16		5.34		5.34		6.61		5.36
Other		2.00		2.00		3.00		1.00		3.00		2.00
Tot Grow		47.19		103.88		78.18		59.84		115.94		59.81
Variable Harvesting Costs -												
Power/Eqpt-												
Fuel, oil		8.91		3.94		2.70		4.40		2.63		4.50
Repair		12.47		10.79		9.26		8.97		9.16		9.56
Drying		0.00		37.80		0.00		0.00		0.57		0.00
Twine		6.08		0.00		0.00		2.03		0.00		2.03
Other		3.00		5.00		5.00		3.00		5.00		3.00
Tot Harv		30.46		57.53		16.96		18.40		17.36		19.09
Int - operating		4.04		5.60		3.30		6.10		4.62		2.73
Tot Selected Var. Costs		81.69		167.01		98.44		84.34		137.92		81.63
Labor (hr)	6.3	43.75	2.5	18.71	2.3	17.19	3.9	27.74	2.4	17.51	3.4	25.38
Tot Var Costs		125.44		185.72		115.63		112.08		155.43		107.01

See notes on page 10.

Table 5. Field Crop Enterprise Budgets
Comparison of Returns Over Variable Costs
1,200 acre, Crop Farm #1 - 1988 Projected
(No participation in government programs)

Crop	Hay	Corn Grain (conv-till)	Soybeans (drilled)	Winter Wheat	Substituted for Soybeans RK Beans	Oats
Acres	100	750	200	150	200	200
Yield / ac	3 tn	120 bu	35 bu	60 bu	1,200 lb	80 bu
Price / Unit, $	70.00	2.10	5.75	2.70	0.22	1.75
	$	$	$	$	$	$
Returns per Acre -						
Crop	210.00	252.00	201.25	162.00	264.00	140.00
Other	0.00	0.00	0.00	70.00	0.00	60.00
Tot returns	210.00	252.00	201.25	232.00	264.00	200.00
Tot Var Costs - per acre	125.44	185.72	115.63	112.08	155.43	107.01
Net Returns over Var Costs -						
- per acre	84.56	66.28	85.62	119.92	108.57	92.99
- per unit	28.19	0.55	2.45	2.00	0.09	1.16
Break-even price per unit of primary crop to cover var costs	41.81	1.55	3.30	0.70	0.13	0.59
SENSITIVITY TO CROP PRICE OR YIELD CHANGES:						
20% Lower Crop Price or Yield						
Tot return/ ac	168.00	201.60	161.00	185.60	211.20	160.00
Net returns over var costs:						
- per acre	42.56	15.88	45.37	73.52	55.77	52.99
- per unit	14.19	0.13	1.30	1.23	0.05	0.66
20% Higher Crop Price or Yield						
Tot return/ ac	252.00	302.40	241.50	278.40	316.80	240.00
Net returns over var costs:						
- per acre	126.56	116.68	125.87	166.32	161.37	132.99
- per unit	42.19	0.97	3.60	2.77	0.13	1.66

Table 6. Field Crop Enterprise Budgets
Variable Costs per Acre
1,200 acre Crop Farm #1 - 1988 Projected
(Government program participation and non-participation compared)

Crop	Hay		Corn Grain - Conv. Till				Soybeans		Winter Wheat			
			Non-part*		Participate**		(drilled)		Non-part*		Participate**	
Acres pltd / set aside	100		750		525/225		200		150		108/42	
Yield / ac	3 tn		120 bu		84 bu		35 bu		60 bu		43 bu	
	Qty	$	Qty	$	Qty	$	Qty	$	Qty	$	Qty	$
					per base ac						per base ac	
Variable Growing Costs -												
Seed		10.65	24M	19.44	16.8M	13.61	60	13.85	120	13.50	86.4	9.72
Fert-N (lb)	0	0.00	125	25.00	88	17.50	10	2.00	50	10.00	36	7.20
P (lb)	35	7.70	40	8.80	28	6.16	20	4.40	40	8.80	29	6.34
K (lb)	57	7.98	40	5.60	28	3.92	20	2.80	20	2.80	14	2.02
Lime (tn)	0.5	12.75	0.5	12.75	0.35	8.93	0.5	12.75	0.5	12.75	0.36	9.18
Chemicals		2.47		19.81		13.87		29.47		1.08		0.78
Power/Eqpt-												
Fuel, oil		1.65		4.32		3.52		4.57		4.57		3.82
Repair		1.99		6.16		4.80		5.34		5.34		4.54
Other		2.00		2.00		1.40		3.00		1.00		0.72
Tot Grow		47.19		103.88		73.70		78.18		59.84		44.31
Variable Harvesting Costs -												
Power/Eqpt-												
Fuel, oil		8.91		3.94		2.92		2.70		4.40		3.23
Repair		12.47		10.79		7.11		9.26		8.97		6.07
Drying		0.00		37.80		26.46		0.00		0.00		0.00
Twine		6.08		0.00		0.00		0.00		2.03		1.46
Other		3.00		5.00		3.50		5.00		3.00		2.16
Tot Harv		30.46		57.53		39.99		16.96		18.40		12.92
Int - operating		4.04		5.60		3.94		3.30		6.10		4.46
Tot Selected Var. Costs		81.69		167.01		117.63		98.44		84.34		61.69
Labor (hr)	6.3	43.75	2.5	18.71	2.0	15.04	2.3	17.19	3.9	27.74	3.0	21.66
Tot Var Costs		125.44		185.72		132.67		115.63		112.08		83.35

See notes on pages 10 and 11.

* From Table 4.

** Variable costs per acre under the "participate" alternative are reduced to reflect the proportion of acres actually planted, i.e., for corn, 525 acres planted is 70 percent of the total 750 acres in the enterprise, so all costs except fuel, repair, interest and labor are reduced to 70 percent of the "non-participate" costs.

Table 7. Field Crop Enterprise Budgets
Comparison of Returns Over Variable Costs
1,200 acre Crop Farm #1 - 1988 Projected
(Government program participation and non-participation compared)

Crop	Hay	Corn Grain - Conv. Till		Soybeans	Winter Wheat	
		Non-part*	Participate	(drilled)	Non-part*	Participate
Acres pltd/set aside	100	750	525/225	200	150	108/42
Yield / ac	3 tn	120 bu	84 bu	35 bu	60 bu	43 bu
Price / Unit, $	70.00	2.10	2.10	5.75	2.70	2.70
	$	$	$ per base ac	$	$	$ per base ac
Returns per Acre -						
Crop	210.00	252.00	176.40	201.25	162.00	116.64
Other	0.00	0.00	85.05	0.00	70.00	99.97
Tot returns	210.00	252.00	261.45	201.25	232.00	216.61
Tot Var Costs - per acre	125.44	185.72	132.67	115.63	112.08	83.35
Net Returns over Var Costs -						
- per acre	84.56	66.28	128.78	85.62	119.92	133.26
- per unit	28.19	0.55	1.53	2.45	2.00	3.08
Break-even price per unit of primary crop to cover var costs	41.81	1.55	0.57	3.30	0.70	(0.38)
SENSITIVITY TO CROP PRICE OR YIELD CHANGES:						
20% Lower Crop Price or Yield						
Tot return/ ac	168.00	201.60	209.16	161.00	185.60 **	173.29 **
Net returns over var costs:						
- per acre	42.56	15.88	76.49	45.37	73.52	89.94
- per unit	14.19	0.13	0.91	1.30	1.23	2.08
20% Higher Crop Price or Yield						
Tot return/ ac	252.00	302.40	313.74	241.50	278.40 **	259.93 **
Net returns over var costs:						
- per acre	126.56	116.68	181.07	125.87	166.32	176.58
- per unit	42.19	0.97	2.16	3.60	2.77	4.09

See notes on page 11.

* From Table 5.
** Includes straw at adjusted price and yield.

Table 8. Field Crop Enterprise Budgets
Variable Costs
1,200 acre Crop Farm #2 - 1988 Projected
(No participation in government programs)

Crop	Hay		Corn Grain (no-till)		Soybeans (drilled)		Winter Wheat	
Acres	100		750		200		150	
Yield / ac	3 tn		110 bu		35 bu		60 bu	
	qty	$	qty	$	qty	$	qty	$
Variable Growing Costs -								
Seed		10.65	26M	21.75	60	13.85	120	13.50
Fert-N (lb)	0	0.00	145	29.00	10	2.00	50	10.00
P (lb)	35	7.70	40	8.80	20	4.40	40	8.80
K (lb)	57	7.98	40	5.60	20	2.80	20	2.80
Lime	0.5	12.75	0.75	19.13	0.5	12.75	0.5	12.75
Chemicals		2.47		30.60		29.47		1.08
Power/Eqpt-								
Fuel, oil		1.82		1.27		4.92		4.92
Repair		1.91		2.73		4.92		4.92
Other		2.00		2.00		3.00		1.00
Tot Grow		47.28		120.88		78.11		59.77
Variable Harvesting Costs -								
Power/Eqpt-								
Fuel, oil		8.91		3.93		2.71		4.44
Repair		12.66		10.79		9.30		9.07
Drying		0.00		34.65		0.00		0.00
Twine		6.08		0.00		0.00		2.03
Other		3.00		5.00		5.00		3.00
Tot Harv		30.65		54.37		17.01		18.54
Int - operating		4.05		6.08		3.30		6.11
Tot Selected Var. Costs		81.98		181.33		98.42		84.42
Labor (hr)	6.3	43.75	1.7	12.49	2.2	16.68	3.8	27.28
Tot Var Costs		125.73		193.82		115.10		111.70

See notes on page 10.

Table 9. Field Crop Enterprise Budgets
Comparison of Returns Over Variable Costs
1,200 acre Crop Farm #2 - 1988 Projected
(No participation in government programs)

Crop	Hay	Corn Grain (no-till)	Soybeans (drilled)	Winter Wheat
Acres	100	750	200	150
Yield / ac	3 tn	110 bu	35 bu	60 bu
Price / Unit, $	70.00	2.10	5.75	2.70
	$	$	$	$
Returns per Acre -				
Crop	210.00	231.00	201.25	162.00
Other	0.00	0.00	0.00	70.00
Tot returns	210.00	231.00	201.25	232.00
Tot Var Costs - per acre	125.73	193.82	115.10	111.70
Net Returns over Var Costs -				
- per acre	84.27	37.18	86.15	120.30
- per unit	28.09	0.34	2.46	2.01
Break-even price per unit of primary crop to cover var cost	41.91	1.76	3.29	0.70
SENSITIVITY TO CROP PRICE OR YIELD CHANGES:				
20% Lower Crop Price or Yield				
Tot return/ ac	168.00	184.80	161.00	185.60 *
Net returns over var costs:				
- per acre	42.27	(9.02)	45.90	73.90
- per unit	14.09	(0.08)	1.31	1.23
20% Higher Crop Price or Yield				
Tot return/ ac	252.00	277.20	241.50	278.40 *
Net returns over var costs:				
- per acre	126.27	83.38	126.40	166.70
- per unit	42.09	0.76	3.61	2.78

* Includes straw at adjusted price and yield.

Table 10. Field Crop Enterprise Budgets
Variable Costs per Acre
1,200 acre Crop Farm #1 - 1988 Projected
(Government program participation - optimun crop combination)

Crop	Hay		Alt corn harv - conv, part DSC & HMC		All D S Corn*		Alternate crops R K Beans		Soybeans*		Wheat Participate	
Acres pltd / set aside	100		525/225		525/225		200		200		108/42	
Yield / ac	3 bu		84 bu		84 bu		1200 bu		35 bu		43 bu	
	Qty	$	Qty per base ac	$	Qty per base ac	$	Qty	$	Qty	$	Qty per base ac	$
Variable Growing Costs -												
Seed		10.65	16.8M	13.61	16.8M	13.61	84	46.20	60	13.85	86	9.72
Fert-N (lb)	0	0.00	88	17.50	88	17.50	25	5.00	10	2.00	36	7.20
P (lb)	35	7.70	28	6.16	28	6.16	62	13.64	20	4.40	29	6.34
K (lb)	57	7.98	28	3.92	28	3.92	43	6.02	20	2.80	14	2.02
Lime (tn)	0.5	12.75	0.35	8.93	0.35	8.92	0.5	12.75	0.5	12.75	0.36	9.18
Chemicals		2.47		13.87		13.87		18.13		29.47		0.78
Power/Eqpt-												
Fuel, oil		1.72		3.35		3.52		4.94		4.57		3.60
Repair		1.97		4.60		4.80		6.28		5.34		3.85
Other		2.00		1.40		1.40		3.00		3.00		0.72
Tot Grow		47.24		73.34		73.70		115.96		78.18		43.41
Variable Harvesting Costs -												
Power/Eqpt-												
Fuel, oil		8.98		2.92		2.92		2.77		2.70		3.23
Repair		12.99		7.11		7.11		8.58		9.26		6.11
Drying		0.00		13.23		26.46		0.57		0.00		0.00
Twine		6.08		0.00		0.00		0.00		0.00		1.46
Other		3.00		3.50		3.50		5.00		5.00		2.16
Tot Harv		31.05		26.76		39.99		16.92		16.96		12.96
Int - operating		4.07		3.47		3.94		4.61		3.30		4.40
Tot Selected Var. Costs		82.36		103.57		117.63		137.49		98.44		60.77
Labor (hr)	6.4	44.21	2.0	14.55	2.0	15.04	2.6	19.41	2.3	17.19	3.0	21.06
Tot Var Costs		126.57		118.12		132.67		156.90		115.63		81.83

See notes on pages 10 and 11.

* Data from Table 6.

Table 11. Field Crop Enterprise Budgets
Comparison of Returns Over Variable Costs
1,200 acre Crop Farm #1 - 1988 Projected
(Government program participation - optimun crop combination)

Crop	Hay	Alt corn harv - conv, part		Alternate crops		Wheat
		DSC & HMC	All D S Corn*	R K Beans	Soybeans*	Participate
Acres pltd/set aside	100	525/225	525/225	200	200	108/42
Yield / ac	3 tn	84 bu	84 bu	1,200 lb	35 bu	43 bu
Price / Unit, $	70.00	2.15	2.10	0.22	5.75	2.70
	$	$ per base ac	$ per base ac	$	$	$ per base ac
Returns per Acre -						
Crop	210.00	180.60	176.40	264.00	201.25	116.10
Other	0.00	85.05	85.05	0.00	0.00	99.97
Tot returns	210.00	265.65	261.45	264.00	201.25	216.07
Tot Var Costs - per acre	126.57	118.12	132.67	156.90	115.63	81.83
Net Returns over Var Costs -						
- per acre	83.43	147.53	128.78	107.10	85.62	134.24
- per unit	27.81	1.76	1.53	0.09	2.45	3.12
Break-even price per unit of primary crop to cover var costs	42.19	0.39	0.57	0.13	3.30	(0.42)
SENSITIVITY TO CROP PRICE OR YIELD CHANGES:						
20% Lower Crop Price or Yield						
Tot return/ ac	168.00	212.52	209.16	211.20	161.00	172.86
Net returns over var costs:						
- per acre	41.43	94.40	76.49	54.30	45.37	91.03
- per unit	13.81	1.12	0.91	0.05	1.30	2.12
20% Higher Crop Price or Yield						
Tot return/ ac	252.00	318.78	313.74	316.80	241.50	259.28
Net returns over var costs:						
- per acre	125.43	200.66	181.07	159.90	125.87	177.45
- per unit	41.81	2.39	2.16	0.13	3.60	4.13

See notes on page 11.

* Data from Table 7.

Table 12. Field Crop Enterprise Budgets
Comparison of Farm Total Costs and Returns
1988 Projected

Item	500 Acre Dairy Farm	1,200 Acre Crop Farm #1 Conventional Corn Without Participation	1,200 Acre Crop Farm #1 Conventional Corn With Participation	1,200 Acre Crop Farm #2 No-till Corn Without Participation
	$	$	$	$
Total Crop Returns[a]	135,100	285,050	289,829	269,300
Variable Costs				
Growing:				
Seed	7,814	20,438	15,498	22,173
Fertilizer, lime	17,595	51,498	38,322	59,279
Chemicals, other	6,569	23,609	18,615	31,705
Machinery-fuel, repairs	3,854	11,696	9,813	6,820
Total Growing	35,832	107,240	82,247	119,977
Total Harvesting[b]	13,798	52,348	38,352	50,025
Interest - operating	2,064	6,176	4,689	6,537
Labor	15,732	26,007	22,484	21,174
Total Variable Costs[b]	67,426	191,771	147,772	197,714
Fixed Costs				
Machine ownership	34,672	53,374	53,412	47,695
Land	15,000	36,000	36,000	36,000
Total Fixed Costs	49,672	89,374	89,412	83,695
Total Crop Costs[b]	117,098	281,145	237,184	281,409
Net Returns Over:				
Variable Costs - Farm	67,674	93,279	142,057	197,714
Per Acre	135	78	118	165
Total Costs - Farm (return to mgmt. & profit)	18,002	3,905	52,645	(12,109)
Per Acre	36	3	44	(10)

[a]Value at harvest time at the farm. Returns include straw and government program receipts.
Crop acres - Dairy Farm - Hay (100), HCS (150), Corn Silage (150), HMEC (100.
Crop Farms - Hay (100), Corn Grain (750), Soybeans (200), Wheat (150). ASCS participating farm diverts 225 acres corn, 42 acres wheat.

[b]Includes drying; excludes hauling, storage, marketing, and management.

Table 13. Field Crop Enterprise Budgets
Comparison of Farm Total Costs and Returns
1,200 Acre Crop Farm #1 - 1988 Projected
(no participation in government programs)

Item	Crop (acres) plus - Hay (100), Corn Grain (750), W. Wheat (150) Soybeans (200) or	RK Beans (200) or	Oats (200)
	$	$	$
Total Crop Returns[a]	285,050	297,600	284,800
Variable Costs			
Growing:			
Seed	20,438	26,908	20,598
Fertilizer, lime	51,498	54,590	53,538
Chemicals, other	23,609	21,341	17,731
Machinery - fuel, repairs	11,696	12,060	11,731
Total Growing	107,240	114,898	103,598
Total Harvesting	52,348	52,466	52,638
Interest - operating	6,176	6,443	6,064
Labor	26,007	26,115	27,447
Total Variable Costs	191,771	199,923	189,746
Fixed Costs			
Machine ownership	53,374	53,374	51,134
Land	36,000	36,000	36,000
Total Fixed Costs	89,374	89,374	87,134
Total Crop Costs[b]	281,145	289,296	276,881
Net Returns Over:			
Variable Costs - Farm	93,279	97,677	95,054
Per acre	78	81	79
Total Costs - Farm (Return to mgmt. & profit)	3,905	8,304	7,919
Per acre	3	7	7

[a]Value at harvest time at the farm. Returns include straw.

[b]Includes drying; excludes hauling, storage, marketing, and management.

Table 14. Comparison of Farm Total Costs and Returns Various Marketing and Crop Mix Combinations 1,200 Acre Crop Farm #1 - 1988 Projections

	Full Participation in Gov't Programs		
	Base farm with: corn sold as:		Base farm w/DSC & HMC & RK Beans
	DSC	DSC/HMC	
	$	$	$
Total Crop Returns[a]	289,829	292,979	305,529
Variable Costs			
Growing:			
Seed	15,498	15,498	21,968
Fertilizer, lime	38,322	38,322	41,414
Chemicals, other	18,615	18,615	16,347
Machinery - fuel, repairs	9,813	9,813	9,691
Total Growing	82,247	82,247	89,419
Total Harvesting	38,352	28,430	28,503
Interest - operating	4,689	4,345	4,590
Labor	22,484	22,484	22,380
Total Variable Costs	147,772	137,506	144,892
Fixed Costs			
Machine ownership	53,412	53,412	53,412
Land	36,000	36,000	36,000
Total Fixed Costs	89,412	89,412	89,412
Total Crop Costs[b]	237,184	226,918	234,304
Net Returns Over:			
Variable Costs - Farm	142,057	155,474	160,638
Per acre	118	130	134
Total Costs - Farm (Return to mgmt. & profit)	52,645	66,061	71,226
Per acre	44	55	59

[a]Value at harvest time at the farm. Returns include straw.

[b]Includes drying; excludes hauling, storage, marketing, and management.

GROWER WORKSHEETS

Budget Worksheet. Field Crop Enterprise - Variable Costs and Returns per Acre

Worksheet 1. Calculation of Returns Over Crop Cash Variable Costs

Worksheet 2. Calculation of Annual Farm Cash Fixed Costs

Worksheet 3. Cash Results of Crop Mix Alternatives

Grower Worksheets

The following worksheets are intended to assist the crop producer in making decisions with regard to his or her combination of enterprises for the coming year. Table 15, the Budget Worksheet, closely follows the format of the budgets developed in Table 2 through Table 11. Completion of the Budget Worksheet for a crop enterprise will enable the grower to compare his or her estimate with the budgets in this publication for variable costs and returns per acre for a given crop.

Following the Budget Worksheet is a series of three worksheets designed to guide the user through a cash flow projection for a proposed crop mix for the whole farm. The format is somewhat different from that used in the budgets. Of necessity, the budgets present reasonable estimates of typical costs per acre for each crop suggested. They are based on stated input prices and levels and machinery complement assumptions. On the other hand, the worksheets enable a grower to enter specific figures based on his or her experience and estimates. Thus, the results should be a more accurate estimate of an individual grower's experience.

Worksheet 1 provides a place to list expected returns and variable costs per acre for each proposed crop. The purpose is to estimate the returns per acre over cash variable costs. One major problem may be in estimating fuel and repair costs for power (tractors and trucks) and equipment used to grow and harvest the crops. Table 16 summarizes these costs for crops used in the budgets. These fuel and repair costs would be reasonable to use in Worksheet 1 in the absense of better farm data.

Worksheet 2 provides a place to list the various cash fixed costs for the whole farm business for the previous year. Once summarized, last year's costs can be adjusted to reflect changes that can be anticipated for this year. For continued farm operation, these cash costs must be met regardless of crop mix decisions.

Finally, Worksheet 3 provides a place to summarize returns over cash variable costs for two different proposed crop mixes. It leads to an estimate of cash available or needed after allowing for variable costs for each crop mix, total farm cash fixed costs including the operator's living costs, and scheduled debt service. Excess cash would be available for operating loan interest, capital purchases or savings, etc. Operating loan principal is covered by the cash variable costs included. A lack of excess cash would indicate a need for additional operating cash from increased borrowing, savings, off-farm income or other nonfarm sources during the year. This is a cash flow projection for the year; it is not a measure of enterprise or farm profit since important costs such as depreciation and equity interest have not been considered.

Table 15. Crop _____ Year _____

BUDGET WORKSHEET. Field Crop Enterprise
Variable Costs and Returns per Acre

Item	Quantity	Units	Per Unit	Average Per Acre
	number		$	$
Returns				
Crop _____	_____	_____	_____	_____
Other _____	_____	_____	_____	_____
Total Crop Returns				(1)$_____
Variable Costs				
Growing				
Seed _____	_____	_____	_____	_____
Fert._____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Lime	_____	_____	_____	_____
Chem._____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Power/Equipment[a] - Fuel, oil				_____
Repair, maint.				_____
Other				_____
Total Growing Costs				$_____
Harvesting				
Power/Equipment[a] - Fuel, oil				_____
Repair, maint.				_____
Drying				_____
Twine, supplies				_____
Other				_____
Total Harvesting Costs				_____
Interest - operating				_____
Total Selected Variable Costs				$_____
Labor _____	_____	hours	_____	_____
_____	_____	hours	_____	_____
Total Labor Costs				_____
Total Variable Costs				(2)$_____
Net Returns over Variable Costs				(1-2)$_____

[a]See Table 16 in text for suggested costs if farm data are not available.

Table 16. Budgeted Fuel and Repair Costs for Machinery Needed to Grow and Harvest Selected Crops, 1988

Crop	From Table:	Cash Variable Costs per Acre	
		Fuel, Lubrication	Repairs, Maintenance
		$	$
Hay	2	9.81	14.13
Hay crop silage	2	13.15	21.49
Corn silage	2	12.75	18.08
High moisture ear corn	2	11.73	16.58
Corn grain - conv. till	4	8.26	16.95
Corn grain - no-till	8	5.20	13.52
Oats	4	9.07	14.92
Wheat	4	8.97	14.31
Soybeans	4	7.27	14.60
Red Kidney Beans	4	7.22	15.77

Note - Use data in Tables 2, 4, and 8 as a guide for allocating these costs between growing and harvesting, if desired.

Worksheet 1. CALCULATION OF RETURNS OVER CROP CASH VARIABLE COSTS

Crop Mix. No. _____ (Use crops that are . . .

Crop		_____	_____
Yield per acre expected		_____	_____
Price per unit expected when sold		$_____	$_____
Crop returns per acre		$_____	$_____
Other returns per acre		_____	_____
Total returns per acre	(1)	$_____	$_____
Cash Variable Costs[a]		-------- per acre ---------	
Labor - part-time seasonal		$_____	$_____
Seed		_____	_____
Fertilizer: _____		_____	_____
_____		_____	_____
_____		_____	_____
Lime		_____	_____
Chemicals: Herbicides		_____	_____
Insecticides		_____	_____
Fungicides		_____	_____
Seed Treatment		_____	_____
Supplies - twine, preservative, etc.		_____	_____
Power & equipment to grow & harvest:[b]			
- Fuel & lube		_____	_____
- Repair & maintenance		_____	_____
Machine hire, rent		_____	_____
Hauling		_____	_____
Marketing		_____	_____
Storage		_____	_____
Other cash costs		_____	_____
Total Crop Cash Variable Costs	(2)	$_____	$_____
Returns Over Cash Variable Costs	(1-2)	$_____	$_____

[a]Costs experienced only if the crop is produced.

[b]See Table 16 for suggested costs if farm data is not available.

Worksheet 1. (continued)

. . . feasible for your operation - include set-aside acres as a "crop".)

$	$	$	$	$	$
$	$	$	$	$	$
$	$	$	$	$	$

---------- per acre ----------

$	$	$	$	$	$
$	$	$	$	$	$
$	$	$	$	$	$

Worksheet 2. CALCULATION OF ANNUAL FARM CASH FIXED COSTS[a]

Total crop acres:	Last Year	This Year
Owned		
Rented		
Total Operated		

Annual Cash Fixed Costs	--- total cost per farm ---	
Operator family living	$	$
Regular hired labor -		
Gross wages		
Benefits & employer costs		
Taxes - real estate		
Rent - cropland, buildings		
Insurance - fire, liability		
Vehicle taxes & insurance		
Utilities - phone, electric, water, etc.		
Miscellaneous costs		
Total Farm Cash Fixed Costs	$	$

[a]Note: These annual farm cash fixed costs must be met for continued operation of the business this year. This year's costs are based on last year's costs adjusted to reflect anticipated changes in costs, price levels and, perhaps, crop mixes and acreages. Consideration of these factors is necessary to make reasonable estimates of the cash fixed costs for the farm business for "This Year".

Worksheet 3. CASH RESULTS OF CROP MIX ALTERNATIVES

Year 19___

Crop (From Worksheet 1)	Crop Mix 1 Acres (1)	Returns Over Cash Variable Costs Per Acre (2)	Returns Over Cash Variable Costs Total (1x2)	Crop Mix 2 Acres (1)	Returns Over Cash Variable Costs Per Acre (2)	Returns Over Cash Variable Costs Total (1x2)
_____	_____	$_____	$_____	_____	$_____	$_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____
Total Farm Return Over Cash Variable Costs			$_____			$_____
less Total Farm Cash Fixed Costs (from Worksheet 2, this year)			-_____			-_____
less Scheduled Debt Service Excluding Crop Loans[a] for the Current Year			-_____			-_____
Cash - available for crop loan interest, purchases, savings, etc.			$_____			$_____
or - (needed) from increased debt or nonfarm sources			($_____)			($_____)

[a]Crop or operating loan principal is covered by cash variable costs included on Worksheet 1.

Appendix Table 1. Crop Machinery Investment
500 Acre Dairy Farm[a]
1988 Projected

Item		1988 List Price	Purchase Price[b]	Annual Ownership Cost[c]
		$	$	$
Tractors - 120 hp		44,500	34,511	5,273
80 hp		25,100	19,466	2,974
60 hp		21,500	16,674	2,548
Trucks - pick-up, 2WD		12,775	9,907	2,087
Large farm	(2 used)	16,000	12,408	2,212
Plow	(5-18")	10,200	7,910	1,285
Disc	(14')	6,750	5,235	850
Drag	(16')	1,900	1,474	239
Seeder w/cultipacker	(10')	4,400	3,412	554
Corn planter	(6R)	14,000	10,857	1,763
Sprayer	(28')	3,250	2,520	409
Cultivator	(6R)	2,900	2,249	365
Mower-conditioner	(12')	15,600	13,400	2,737
Rake, side	(9')	3,550	2,753	447
Baler w/kicker		14,500	11,245	1,826
Bale wagons	(2)	4,000	3,102	474
Forage harvester		17,700	15,204	3,106
- Grass head	(7.5')	3,800	3,264	667
- Corn head	(3R)	8,488	7,291	1,489
- Snapper head	(2R)	7,350	6,313	1,290
Dump wagon	(12')	8,450	7,258	1,566
Grain wagons	(2)	4,300	3,335	510
Totals		251,013	199,788	34,671
Per Acre		502	400	69

[a]Dairy farm with 100 acres of hay, 150 acres of hay crop silage, 150 acres of corn silage, and 100 acres of high moisture ear corn. Complement does not include power or equipment needed for livestock.

[b]Purchase price is based on the 1988 list price times an index value to reflect an average price paid over the average ownership period for each machine.

[c]Ownership cost is based on these assumptions:

Owned for:
- 6 years - Forage harvester and heads, dump wagon, and mower.
- 10 years - All other equipment, tractors, and trucks.

Trade-in values:
- 40 percent - Tractors and wagons.
- 30 percent - Mower, forage harvester, and heads.
- 10 percent - Trucks.
- 20 percent - All other equipment.

Straightline depreciation, 10.4 percent interest on average investment; two percent of purchase price for insurance and storage except actual truck insurance.

Appendix Table 2. Crop Machinery Investment
1,200 Acre Crop Farm #1[a]
1988 Projected

Item		1988 List Price	Purchase Price[b]	Annual Ownership Cost[c]
		$	$	$
Tractors - 120 hp		44,500	34,511	5,273
80 hp FWA		31,150	24,158	3,691
80 hp		25,100	19,466	2,974
60 hp		21,500	16,674	2,548
40 hp		16,750	12,990	1,985
Trucks - Pick-up, 4WD		14,500	11,245	2,304
Large farm	(2 used)	16,000	12,408	2,212
Combine - Power unit		63,350	55,122	12,546
Corn head	(4R)	13,300	11,573	2,634
Grain head	(13')	7,750	6,743	1,335
Bean head	(4R)	13,000	11,312	2,240
Plow	(5-18") (2)	20,400	15,820	2,570
Disc	(14') (2)	13,500	10,470	1,700
Drag	(16') (2)	3,800	2,948	479
Cultipacker	(14')	1,850	1,435	226
Drill-seeder	(21x7")	6,850	5,312	863
Corn planter	(8R)	17,300	13,417	2,114
Sprayer	(28')	3,250	2,520	409
Cultivator	(8R)	4,500	3,490	550
Mower-conditioner	(9')	10,250	7,949	1,253
Rake, side	(9')	3,550	2,753	421
Baler w/kicker		14,500	11,245	1,826
Bale wagons	(3)	6,000	4,653	711
Grain wagons	(2)	4,300	3,335	510
Totals		376,950	290,304	53,374
Per Acre		314	242	44

[a]For a 1,200 acre cash crop farm with 100 acres of hay, 750 acres of corn grain, 200 acres of soybeans, and 150 acres of winter wheat.

[b]Purchase price is based on the 1988 list price times an index value to reflect an average price paid over the average ownership period for each machine.

[c]Ownership cost is based on these assumptions:

Owned for:
- 5 years - Combine and heads.
- 10 years - All other equipment, tractors, and trucks.

Trade-in values:
- 50 percent - Grain and bean heads.
- 40 percent - Tractors, wagons, and rake.
- 30 percent - Combine and corn head, planter, cultipacker, cultivator, and mower.
- 10 percent - Trucks.
- 20 percent - All other equipment.

Straightline depreciation, 10.4 percent interest on average investment; two percent of purchase price for insurance and storage except actual truck insurance.

Appendix Table 3. Crop Machinery Investment
1,200 Acre Crop Farm #2[a]
1988 Projected

Item		1988 List Price	Purchase Price[b]	Annual Ownership Cost[c]
		$	$	$
Tractors - 120 hp		44,500	34,511	5,273
80 hp FWA		31,150	24,158	3,691
60 hp		21,500	16,674	2,548
40 hp		16,750	12,990	1,985
Trucks - Pick-up, 4WD		14,500	11,245	2,304
Large farm	(2 used)	16,000	12,408	2,212
Combine - Power unit		63,350	55,122	12,546
Corn head	(4R)	13,300	11,573	2,634
Grain head	(13')	7,750	6,743	1,335
Bean head	(4R)	13,000	11,335	2,240
Plow	(5-18")	10,200	7,910	1,285
Disc	(14')	6,750	5,235	850
Drag	(16')	1,900	1,474	239
Cultipacker	(14')	1,850	1,435	226
Drill-seeder	(21x7")	6,850	5,312	863
Corn planter	(8R no-till)	19,100	14,813	2,334
Sprayer	(28')	3,250	2,520	409
Mower-conditioner	(9')	10,250	7,949	1,253
Rake, side	(9')	3,550	2,753	421
Baler w/kicker		14,500	11,245	1,826
Bale wagons	(3)	6,000	4,653	711
Grain wagons	(2)	4,300	3,335	510
Totals		330,650	265,193	47,695
Per Acre		276	221	40

[a]For a 1,200 acre cash crop farm with 100 acres of hay, 750 acres of no-till corn grain, 200 acres of soybeans, and 150 acres of winter wheat.

[b]Purchase price is based on the 1988 list price times an index value to reflect an average price paid over the average ownership period for each machine.

[c]Ownership cost is based on these assumptions:

Owned for:
- 5 years - Combine and heads.
- 10 years - All other equipment, tractors, and trucks.

Trade-in values:
- 50 percent - Grain and bean heads.
- 40 percent - Tractors, wagons, and rake.
- 30 percent - Combine and corn head, planter, cultipacker, and mower.
- 20 percent - All other equipment.

Straightline depreciation, 10.4 percent interest on average investment; two percent of purchase price for insurance and storage except actual truck insurance.

Appendix Table 4. Machinery Operating Factors Field Crop Enterprise Budgets 1988

Machine		Width	Speed	Field Efficiency	Tractor Size
		feet	mph	percent	hp
Plow	(5-18")	7.5	4.0	80	120, 80 FWA
Disc	(14')	14.0	4.5	80	120, 80 FWA
Drag	(16')	16.0	5.5	80	80 FWA, 80
Cultipacker	(14')	14.0	6.0	80	40
Drill-seeder		12.2	5.0	75	60
Corn planter	(6R)	15.0	5.0	65	60
Corn planter	(8R)	20.0	4.5	70	80
Corn planter	(8R-NT)	20.0	5.0	70	80 FWA
Sprayer	(28')	28.0	4.0	65	60
Cultivator	(6R)	15.0	4.5	80	80
Cultivator	(8R)	20.0	4.5	80	80
Mower-conditioner	(9')	9.0	5.0	70	60
Mower-conditioner	(12')	12.0	4.5	70	80
Rake, side		9.0	4.5	80	40
Rake, side		12.0	4.5	80	60
Baler w/kicker		9.0	3.0	70	80
Baler w/kicker		12.0	2.5	70	80